Space Weather Forecast

Issued on Wednesday, 16 November 2022 at 12:06 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate flares (Minor to Moderate radio blackouts) throughout. Slight chance of (Minor) Radiation Storms and Strong flares (Strong radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been at Low levels, with often frequent but low level Common-class flare activity, mostly originating from the largest and most complex spot group located toward the northwest limb.

There are three other numbered regions currently on the visible disc. The other moderately large region is located just south of the most active region mentioned above, but has been largely inactive. The other regions are small and simple. Two further un-numbered spot groups have recently appeared near the southeast limb.

No significant Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has been slow-ambient. Total magnetic field strength has been weak throughout, with the important north-south component fluctuating weakly. Geomagnetic activity was Quiet (Kp 0-1) throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be generally Low, with a chance of M-class flares, and a slight chance of isolated X-flares, most likely from the largest, most complex spot in the far northwest.

Solar Wind / Geomagnetic Activity: No significant Earth-directed CMEs are expected during the period, although some minor CME effects are possible from a weak glancing passage either later on 17 Nov or during 18 Nov.

Solar winds are currently at slow-ambient levels. A further enhancement is possible from weak coronal hole influence during Day 1 (16 Nov) from two small coronal holes. Geomagnetic activity is forecast to be predominantly Quiet through much of the coming 4-day period. However, there is a chance of Unsettled intervals, and perhaps a slight chance of an isolated Active interval should any faster wind effects manifest, or if there are any weak CME related enhancements either late on Day 2 (17 Nov) or through the course of Day 3 (18 Nov).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy

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protons) is most likely to persist at background levels. However, there is a slight chance of a solar radiation storm emanating from the two largest sunspot regions in the far northwest.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	45	40	30	10
Very Active	R3 to R5 X	No	10	10	5	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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